



## New Species of *Blastobasis* Zeller from New Caledonia and Fiji (Lepidoptera: Gelechioidea: Coleophoridae: Blastobasinae)

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**Abstract** Five species of *Blastobasis* are described: *Blastobasis murcyae*, *B. moffetti*, *B. christou*, *B. orladelaneae* from New Caledonia and *B. lososi* from Fiji Islands. These descriptions represent, for the first time, a report of Blastobasinae (Coleophoridae) on these islands. Photographs of the imagos, illustrations of wing venation, male and female genitalia are provided as available.

**Key words** Archipelago, Australasia, Blastobasini, Fauna, Island, Oceania

### INTRODUCTION

The microlepidoptera have been poorly studied for Fiji Islands and New Caledonia, as well as for much of Oceania. For example, the only blastobasine moth known from this region is *Blastobasis inana* (Butler), a widespread species reported from the Marquesas Archipelago by Clarke (1986). Holloway (1971) and Robinson (1975) discussed the geology, vegetation, and biogeography of New Caledonia and Fiji Islands, respectively, in their treatments of macrolepidoptera of these islands. New Caledonia is considered to be a fragment of the Australian plate, with an origin dating to the Upper Jurassic. The Fiji archipelago lies on oceanic crust, termed the Fiji plate by Robinson (1975), with an origin in the mid-Tertiary.

The Smithsonian Institution sponsored collecting expeditions to New Caledonia during January 11–March 13, 1984 (38 collecting nights) and October 17–November 18, 1986 (11 collecting nights). Collections also were in Fiji Islands (Viti Levu) during November 20–December 10, 1986 (9 collecting nights). The purpose of this paper is to describe five new species of Blastobasinae that were collected during these two expeditions.

Kornerup and Wanscher (1978) was used as a color standard for the description of the adult vestiture. Genitalia were dissected as described by Clarke (1941), except Mercurochrome and chlorazol black were used as stains. Pinned specimens were examined with dissecting and compound microscopes. Measurements of the wings were made with a calibrated ocular micrometer. All type material is deposited in the United States National Museum of Natural History, Smithsonian Institution, Washington, D.C., U.S.A. [USNM] and Muséum National d'Histoire Naturelle, Paris, France [MNHP].

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**Key to the known adult Blastobasinae of New Caledonia and Fiji**

1. Segments of labial palpus wide; inner surface of segment III of labial palpus flat; first flagellomere notched basally; (*males*) ..... 2
- Segments of labial palpus narrow; inner surface of segment III of labial palpus cylindrical; first flagellomere without notch; (*females*) ..... 4
2. Forewing with anal area darkly pigmented or slightly darker than ground color (Figs. 8–9); gnathos directed ventroanteriorly; ventral submarginal area of valva with an elongate whiplike process extending from a widened and elongate base (Fig. 2) ..... *murcyae*
- Forewing with anal area not darkly pigmented (Figs. 10–11); gnathos directed ventrally (Figs. 3–4); ventral submarginal area of valva without an elongate whiplike process extending from a widened and elongate base (Figs. 3–4) ..... 3
3. Lateral wall of tegumen straight or broadly emarginate; dorsal articulation of valva beneath a slightly elliptical, densely microtrichiate membrane; apex of spinelike process of lower part of valva bifurcate; aedeagus broadly curved (Fig. 3) ..... *moffetti*
- Lateral wall of tegumen broadly rounded; dorsal articulation not beneath a slightly elliptical, densely microtrichiate membrane; apex of spinelike process of lower part of valva acuminate; aedeagus nearly straight (Fig. 4) ..... *lososi*
4. Eighth sternum trapezoidal (Fig. 6); membrane posterolateral to ostium without short, hairlike microtrichiae (Fig. 6) ..... *murcyae*
- Eighth sternum rectangular (Figs. 5, 7); membrane posterolateral to ostium with short, hairlike microtrichiae (Figs. 5, 7) ..... 5
5. Antrum wide (Fig. 5) ..... *christou*
- Antrum narrow (Fig. 7) ..... *orladelaneae*

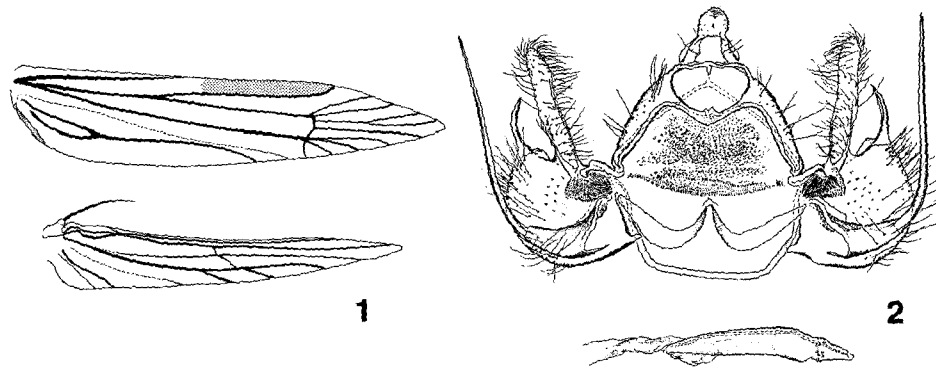
***Blastobasis murcyae* Adamski and Brown, sp. nov.**

(Figs. 1–2, 6, 8–9)

**Diagnosis.** Although *Blastobasis murcyae* shares a notched first flagellomere in the male with other *Blastobasis*, its unusual whiplike process of the valva, shortened lower part of the valva, and ventroanteriorly projecting gnathos, distinguishes it from other related species. Males are paler than females.

**Description.** Head: Vertex and frontoclypeus with scales pale grayish brown, or pale gray to gray and tipped with white; segments of labial palpus about twice as wide in male as in female, inner surface of segment III flat in male, rounded in female; outer surface of labial palpus pale grayish brown intermixed with dark brown, with a few white scales near apical areas of all segments and basal area of segment III in male, scales grayish brown tipped with white in female; inner surface of labial palpus of male paler than outer surface, inner surface concolorous with outer surface in female; proboscis pale brown; scape gray intermixed with pale gray scales; male first flagellomere enlarged distally forming a small excised notch, female first flagellomere without notch.

Thorax: Tegula with scales gray basally, pale grayish brown distally, or pale grayish brown or pale gray tipped with white; mesonotum with scales grayish brown, gray, or gray tipped with white; leg segments with scales dark brown or grayish brown and tipped with white, with pale grayish-brown scales opposite paired spurs and on apical areas, tarsomeres with scales grayish brown or grayish brown tipped with white basally, pale grayish brown or white distally. Forewing (Figs. 1, 8–9): Length 4.5–5.1 mm (n = 29): Pale brown intermixed with dark brown and white scales in male (Fig. 8), darker patterned in female (Fig. 9); cell with three dark grayish-brown spots, one near middle and two near distal end; base of costa and area between CuP and posterior margin brown in male; brown median fascia usually present



Figs. 1-2. *Blastobasis murcyae*: 1. Wing venation; 2. Male genitalia.

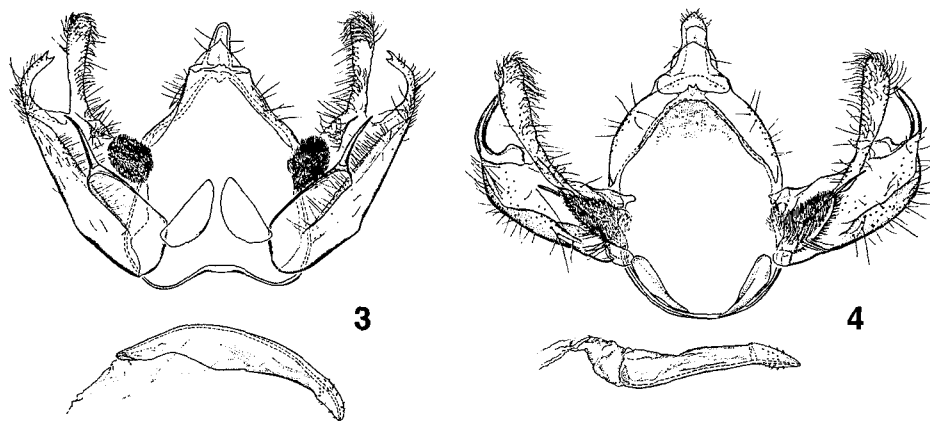
in female, absent in male; undersurface brown; venation (Fig. 1) with  $M_1$  long;  $M_2$  and  $M_3$  stalked from point slightly beyond cell;  $CuA_1$  and  $CuA_2$  short, divergent from distoposterior part of cell. Hindwing (Fig. 1): Pale grayish brown; venation with  $M_1$  present; cubitus appearing 3-branched, with  $M_2 + M_3$  fused basally with  $CuA_1$ .

Male Genitalia (Fig. 2): Uncus broadly rounded, abruptly widened from midlength to base; gnathos forming a thin band angled ventroanteriorly, ventral margin with two small teeth medially; vinculum wide; juxta bandlike, deeply emarginate medially; upper part of valva mostly digitate and setose, slightly enlarged basally forming a subcircular area with dense, short microtrichiae; lower part of valva short, distally narrowed, forming a stout, spinelike process, ventral submarginal area with an rigid and elongate whiplike process extending beyond abdomen and visible on pinned specimens at low magnification; aedeagus and internal sclerite of aedeagus slightly curved apically; anellus with several stout setae.

Female Genitalia (Fig. 6): Ovipositor telescopic, with 4 membranous subdivisions beyond eighth segment; eighth sternum trapezoidal, eighth tergum with a narrow, median longitudinal, pigmented streak; ostium slightly posterior seventh segment; membrane posterolateral to ostium without microtrichiae; posterior margin of seventh sternum emarginate medially; inception of ductus seminalis slightly anterior to membranous antrum; ductus bursae long, posterior 2/3 membranous, anterior 1/3 with rows of imbricate platelets; corpus bursae longer than wide; signum hornlike.

*Types*. Holotype: ♂, "New Caledonia, Noumea, Baie Tina, 20° 18' S, 166° 18' E, 11, 14-15 Feb. 1984, M. Pogue & M. Epstein"; "♂ Genitalia Slide by D. Adamski 2964, USNM 81452" [green label]. Deposited in USNM. Paratypes (18 ♂, 10 ♀): New Caledonia, 8 ♂, 4 ♀, same data as holotype, ♂ gen. slides by D. Adamski, USNM 81215, 81198, 81453, ♂ wing slide by D. Adamski, USNM 81481; ♀ gen. slide by D. Adamski, USNM 81454, 81455, 81459; 1 ♂, 3 ♀, same label data as holotype except, "11-14 Jan."; 4 ♂, "Ouen Toro, 1 March, M. Pogue & M. Epstein", ♂ gen. slides by D. Adamski, USNM 81193, 81199; 3 ♂, 2 ♀, "2 Km SW Tinip Radio Tower, 200 m, 20° 48' S, 164° 28' E, 18-19 Feb. 1984, M. Pogue & M. Epstein", ♂ gen. slides by D. Adamski, USNM 81216, 81217; 2 ♂, "Col de Mouirange, 225 m, 27 Oct. 1986, UV trap, R. Brown & O. Pellmyr", ♂ gen. slide by D. Adamski, USNM 82262; 1 ♀, same label data as above except, "Mt. Konanénoa, Les Dalmates, 166° 40' 30" E, 22° 12' 30" S, UV trap, 19 Oct. 1986, R. Brown & O. Pellmyr." Twenty-four paratypes deposited in USNM, four paratypes deposited in MNHP.

*Etymology*. *Blastobasis murcyae* is named in honor of C. Murray Adams and Lucy G.



**Figs. 3-4.** Male genitalia of *Blastobasis* spp.: 3. *B. moffetti*; 4. *B. lososi*.

Adams. The specific epithet is formed from parts of two proper names and treated as a noun in apposition.

***Blastobasis moffetti* Adamski and Brown, sp. nov.**

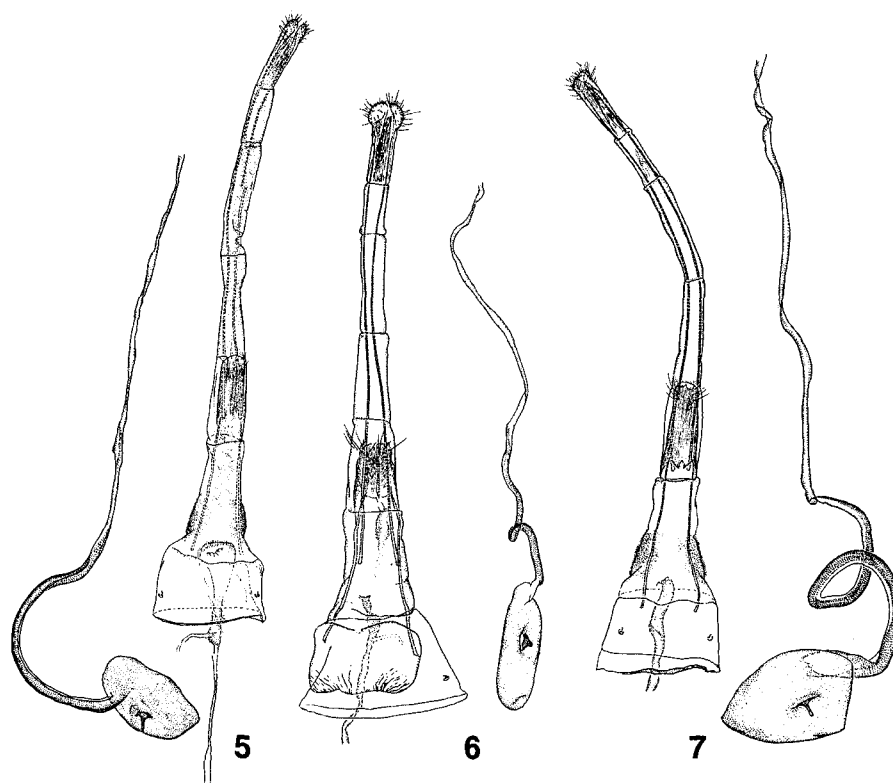
(Figs. 3, 10)

**Diagnosis.** *Blastobasis moffetti* appears similar to *Neoblastobasis spiniharpella* Kuznetsov and Sinev, sharing a subcircular, microtrichiate area at the base of the digitate process of the upper part of the valva, a medial spine on the lower part of the valva, and a divided juxta, but differs from the latter by having the ventrolateral margin of the gnathos straight, apex of the spinelike apical process of lower part of the valva bifurcate, and aedeagus broadly curved.

**Description.** Head: Vertex and frontoclypeus pale brown; segments of labial palpus wide, inner surface of segment III flat; outer surface of labial palpus brown intermixed with pale brown scales, segment II with pale brown scales apically; inner surface of labial palpus pale brown intermixed with a few brown scales; scape and first flagellomere pale brown intermixed with a few brown scales, all other flagellomeres with narrow, gray scales; male first flagellomere enlarged distally forming a small excised notch; proboscis pale brown.

Thorax: Tegula pale brown or brown basally, pale brown distally; mesonotum pale brown or brown intermixed with pale brown scales; segments of foreleg brown intermixed with a few pale brown scales; coxa and femur of pterothoracic legs pale brown intermixed with a few brown scales, tibia of pterothoracic legs brown with pale brown opposite paired spurs; tarsomeres brown basally, pale brown distally. Forewing (Fig. 10): Length 7.0–7.8 mm (n = 5): Pale brown intermixed with brown and dark brown scales; median fascia complete, dark brown and narrowed posteriorly, incomplete, or absent; base pale brown or dark brown intermixed with pale brown scales or with dark brown scales restricted to costa; cell with spots dark brown or faint, one spot near middle and two spots near distal end; outer margin with brown spots present or absent; undersurface brown. Hindwing: Pale grayish brown.

Male Genitalia (Fig. 3): Uncus sparsely setose, apically rounded, gradually widening to base; gnathos narrow, confluent with tegumen, forming a subcircular support for tuba analis, ventral margin with two small, pointed teeth medially; tegumen wide towards dorsal articulations of valva, narrowed posteriorly; vinculum wide, juxta divided; valva in two parts,



**Figs. 5-6.** Female genitalia of *Blastobasis* spp.: 5. *B. christou*; 6. *B. murcya*.

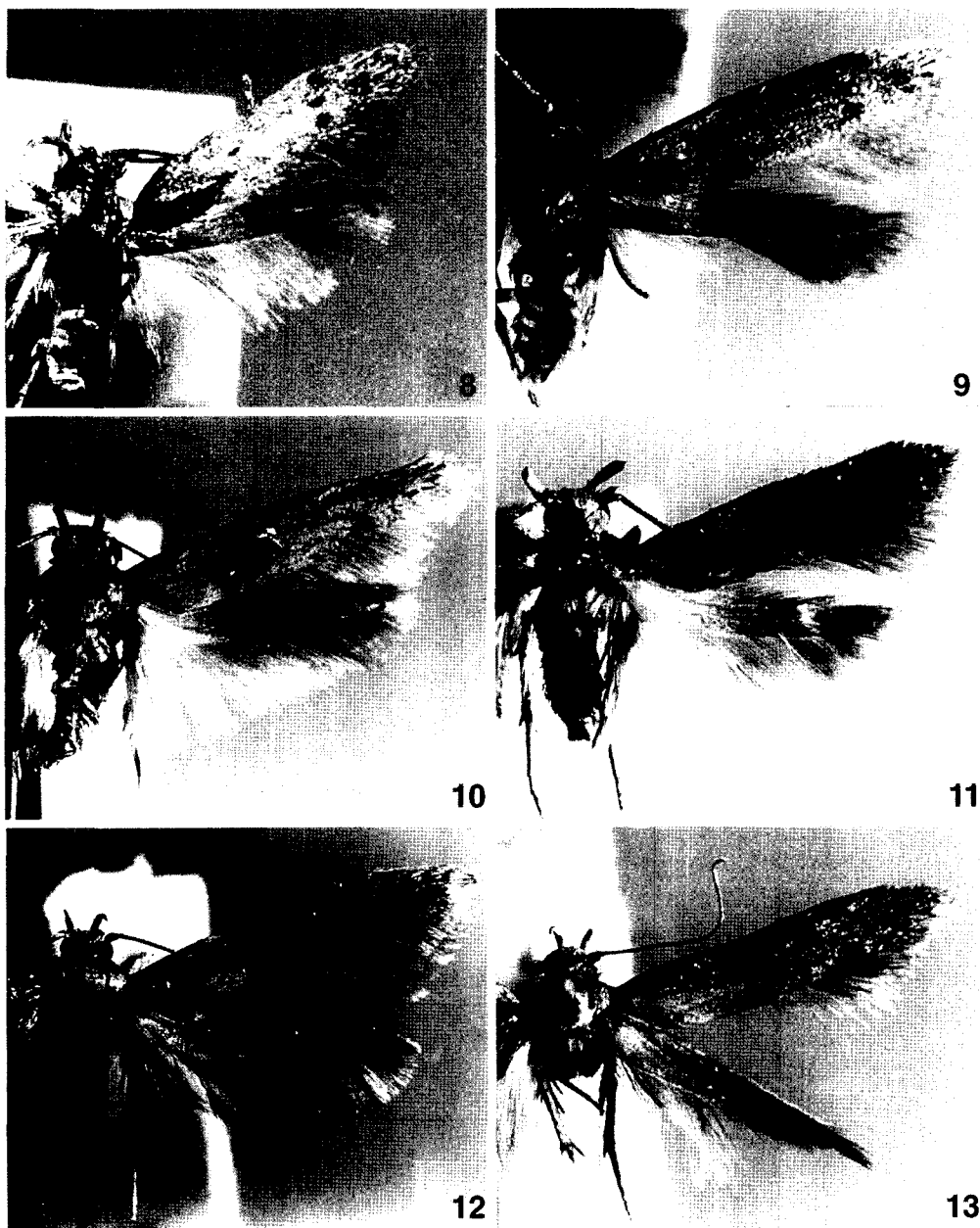
**Fig. 7.** Female genitalia of *Blastobasis orladelanae*.

upper part digitate, setose, basal part enlarged, confluent with dorsal articulation; dorsal articulation beneath a slightly elliptical, densely microtrichiate membrane; lower part of valva wide, with a large setiform process arising from middle, narrowed distally forming a spinelike process with a bifurcate apex; aedeagus and internal sclerite of aedeagus elongate, broadly curved; anellus conical, with several stout setae.

Female Genitalia: Unknown.

*Types.* Holotype: ♂, "New Caledonia: Mé Ori, 600 meters, 165° 40' 15" E, 21° 32' S, Oct. 21, 1986, UV trap, R. Brown & O. Pellmyr"; "♂ Genitalia Slide by DA 4062" [green label]. Deposited in MNHP. Paratypes (4 ♂): New Caledonia: 1 ♂, Mé Ori, "550 meters, 165° 40' 25" E, 21° 32' 30" S, 21 Oct. 1986 UV trap, R. Brown & O. Pellmyr", "♂ Genitalia Slide by D. Adamski 3016, USNM 81480" [green label]; 1 ♂, "Mt. Konanénoa, Les Dalmates, 166° 40' 30" E, 22° 12' 30" S, UV trap, R. Brown & O. Pellmyr", "♂ Wing Slide by DA 3021, USNM 81482"; "♂ Genitalia Slide by DA 4636, USNM 82263"; 2 ♂, "Mandjelia, 650 m, 20° 24' S, 164° 31' E, 20-21 Feb. 1984, M. Pogue & Marc Epstein"; "♂ Genitalia Slide by DA 4064, USNM 81196" [green label]; "♂ Genitalia Slide by D. Adamski 2968, USNM 81456" [green label]. All paratypes deposited in USNM.

*Etymology.* *Blastobasis moffetti* is named in honor of Kenneth Daniel Moffett.



**Figs. 8-13.** Imagos of *Blastobasis* spp.: 8. *B. murcyae* (male paratype); 9. *B. murcyae* (female paratype); 10. *B. moffetti* (holotype); 11. *B. lososi* (holotype); 12. *B. christou* (holotype); 13. *B. orladelaneae* (holotype).

***Blastobasis lososi* Adamski and Brown, sp. nov.**  
(Figs. 4-11)

*Diagnosis.* *Blastobasis lososi* is similar to other *Blastobasis* by sharing a notched first

flagellomere of the male antenna and microtrichiate membranous area between the proximal flange and the base of the upper part of the valva, but differs by having a large spine posterior to and extending beyond the proximal flange. *Blastobasis lososi* is the only blastobasine moth known from Fiji.

*Description.* Head: Vertex and frontoclypeus pale brown, with pale gray scales on lateral margins; segments of labial palpus wide, inner surface of segment III flat; outer surface of labial palpus with segments I–II brown intermixed with a few pale brown scales, segment III pale brown intermixed with a few brown scales; inner surface pale brown intermixed with a few brown scales; scape and first flagellomere of antenna with brown scales intermixed with pale brown scales, all other flagellomeres with narrow gray scales; first flagellomere with enlarged distal part, forming a small excised notch; proboscis pale gray.

Thorax: Tegula and mesonotum brown; segments of foreleg brown intermixed with a few pale brown scales; femur of midleg pale brown intermixed with brown scales distally, tibia brown intermixed with a few pale brown scales apically; hindfemur pale brown, tibia brown with pale brown scales slightly distal to basal articulation and opposite paired basal and distal spurs; tarsomeres basally brown, distally pale brown. Forewing (Fig. 11): Length 4.8 mm (n = 1): pale brown intermixed with brown scales; base and basal half of costa brown; median fascia brown, complete, chevron-shaped; cell with two brown distal spots; distal 1/4 mostly brown intermixed with pale brown scales; undersurface brown. Hindwing: Pale grayish brown.

Male Genitalia (Fig. 4): Uncus sparsely setose, apically acuminate, slightly narrowed subapically, gradually widening towards base; gnathos confluent with tegumen, forming a subcircular support for tuba analis, ventral margin with two small, pointed teeth medially; tegumen globelike, tergal setae present; vinculum wide; juxta bandlike; valva in two parts, upper part digitate, setose, basal half narrow, distal half gradually widening to apex; lower part of valva wide, narrowed distally and forming a spinelike apical process; process with a flattened inner surface; proximal flange of valva slightly elongate, subtriangular, with dense microtrichiae on membrane above and an elongate spine beneath; aedeagus elongate; internal sclerite of aedeagus elongate, abruptly curved basally; anellus conical, with several stout setae.

Female Genitalia: Unknown.

*Type.* Holotype: ♂, “Fiji [Viti Levu]: South Pacific Bible College, 14 Km W. Lami, 7–10 Dec. 1986, UV trap, R.L. and B.B. Brown”; “♂ Genitalia Slide by DA 4065, USNM 81197” [Green label]. Deposited in USNM.

*Etymology.* *Blastobasis lososi* is named in honor of Joseph O. Losos.

***Blastobasis christou* Adamski and Brown, sp. nov.**

(Figs. 5, 12)

*Diagnosis.* *Blastobasis christou* is unique among other *Blastobasis* treated herein, by possessing an incomplete, dark grayish brown, basal fascia that is demarcated distoposteriorly by a wide, pale band.

*Description.* Head: Vertex and frontoclypeus with scales grayish brown tipped with pale gray; outer surface of labial palpus grayish brown intermixed with a few pale grayish–brown scales to near apex of segment II, inner surface pale grayish brown intermixed with a few brown scales; scape brownish gray intermixed with pale brownish–gray scales, flagellum gray; proboscis grayish brown intermixed with pale grayish–brown scales.

Thorax: Tegula and mesonotum pale grayish brown anteriorly, pale gray posteriorly; segments of legs dark grayish brown with pale gray scales opposite paired spurs and apical

areas, tarsomeres dark grayish brown basally, pale gray distally. Forewing (Fig. 12): Length 7.9 mm ( $n = 1$ ): Distal 2/3 pale brown intermixed with a few brown and pale gray scales; outer margin with brown spots; basal fascia dark grayish brown, incomplete, extending from costa to slightly beyond CuP, demarcated distoposteriorly by a wide band of white and pale gray scales; undersurface brown. Hindwing: Pale grayish brown.

Male Genitalia: Unknown.

Female Genitalia (Fig. 5): Ovipositor telescopic, with 4 membranous subdivisions beyond eighth segment; eighth sternum elongate, eighth tergum with a narrow median longitudinal pigmented streak; ostium situated slightly posterior to seventh segment; antrum wide, membranous; inception of ductus seminalis slightly posterior to antrum; membrane posterolateral to ostium densely covered with short, hairlike microtrichiae; seventh sternum entire; ductus bursae long, posterior 2/3 membranous, anterior 1/3 with internal rows of imbricate platelets; corpus bursae subspherical, with hornlike signum.

*Type.* Holotype: ♀, "New Caledonia: Mt. Panié, 250 meters, 30 Oct. 1986, UV trap, R. Brown & O. Pellmyr"; ♀ Genitalia Slide by DA 4063" [green label]. Deposited in MNHP.

*Etymology.* *Blastobasis christou* is named in honor of Jason Michael Christou.

***Blastobasis orladelanae* Adamski and Brown, sp. nov.**

(Figs. 7, 13)

*Diagnosis.* *Blastobasis orladelanae* can be distinguished from other *Blastobasis* treated herein, by the grayish-brown ground color, absence of fasciae, and dark discal spots of the forewing. The male is unknown.

*Description.* Head: Vertex and frontoclypeus with scales grayish brown tipped with pale gray; outer surface of labial palpus grayish brown intermixed with a few brown and pale-gray scales to near apex of segment II, inner surface as above but paler; scape grayish brown, flagellum gray; proboscis grayish brown.

Thorax: Tegula grayish brown basally, pale grayish brown distally; mesonotum grayish brown; leg segments grayish brown with pale grayish brown opposite paired spurs and apical areas, tarsomeres grayish brown basally, pale grayish brown distally. Forewing (Fig. 13): Length 6.0 mm ( $n = 1$ ): grayish brown intermixed with pale grayish-brown scales and a few pale grayish-brown and white scales; cell with three brown spots, one near midcell and two near distal end; undersurface brown. Hindwing: pale grayish brown.

Male Genitalia: Unknown.

Female Genitalia (Fig. 7): Ovipositor telescopic, with 4 membranous subdivisions beyond eighth segment, eighth sternum elongate, eighth tergum with a narrow median longitudinal pigmented streak; ostium slightly posterior to seventh segment; membrane posterolateral to ostium bursae with dense, short, hairlike microtrichiae; seventh sternum slightly emarginate medially, antrum membranous, slightly widened; ductus bursae long, posterior 2/3 membranous, anterior 1/3 with internal rows of imbricate platelets; corpus bursae slightly elongate, with hornlike signum.

*Type.* Holotype, ♀, "New Caledonia: 2 Km SW Tinip Radio Tower, 200 m[eters], 20° 48' S, 164° 28' E, 18–19 Feb. 1984, M. Pogue & M. Epstein"; ♀ Genitalia Slide by D. Adamski 2972, USNM 81460" [green label]. Deposited in USNM.

*Etymology.* *Blastobasis orladelanae* is named in honor of Orla Pridemore Conway and Delaney Pridemore Conway. The specific epithet is formed from parts of two proper names and is treated as a noun in apposition.



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